

LUMPED-ELEMENT LOW-PASS FILTER IN MULTI-LAYERED SUBSTRATE

Abstract

A lumped-element low-pass filter is formed in a multi-layered substrate. A negative mutual inductance between two inductors is adjusted to a designed value and utilized to improve the rejection in the stopband of the low-pass filter. The two inductors are spiral in shape and the orientations of the first inductor and the second inductor are of opposite sense such that a mutual inductance between the first inductor and the second inductor is negative and equals a designed value. A first capacitor and a second capacitor are shunt-connected to the first and the second inductor respectively to form the elliptic-type filter. A third capacitor is electrically connected to ground at its first end, and electrically connected to the end of the second inductor at which the second inductor is electrically connected to the first inductor in series at its second end.